

REMARKS

In this paper, claim 1 has been amended to correct editorial errors that occurred during translation of the priority documents into English. Specifically, Applicants have amended claim 1, to replace the “=” with “≤” according to the priority document. To support these amendments to claim 1, Applicant points to the copy of international application no. PCT/EP2005/01163 submitted together with the English language specification to the U.S. Patent and Trademark Office on September 29, 2005. In the international application (which was filed in German) the symbols “≤” and “≥” were clearly utilized, and unfortunately during the translational process these symbols were copied incorrectly as “=.” To correct this error, Applicant has amended claim 1 to replace “=” with the appropriate symbol according to the priority documents. Applicants respectfully submit that no new matter has been introduced.

Claim 1 has also been amended to remove V from the claimed composition. Applicant respectfully submits that this amendment is supported, for example, by pages 4 and 5 of the originally-filed specification. In particular, Applicant directs the Examiner’s attention to the following passage:

It has surprisingly been found in this connection that this effects occurs particularly reliably if the steel according to the invention is free of vanadium.

According to a preferred configuration, there is therefore no V whatsoever in steel according to the invention, or it is present only as an inevitable impurity.

In addition to the claim amendments described above, Applicant has amended claims 11, 12, and 16-21 to conform with accepted U.S. practice. Applicants respectfully submit that no new matter has been introduced.

Applicant has amended the Specification in accordance with 37 C.F.R. § 1.121 (b)(3) by Substitute Specification to correct the editing errors described above and to conform the Specification to U.S. patent practice. The Applicant requests that the Specification be replaced by the clean Substitute Specification. Applicant respectfully submits that no new matter has been introduced by these changes.

In the Office Action mailed on October 15, 2008, claims 16-18 were rejected under 35 U.S.C. § 112, second paragraph as being indefinite, claims 1 to 9 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 4,138,278 (hereinafter “Nakasugi et al.”) or in the alternative under 35 U.S.C. § 103(a) as unpatentable in view of Nakasugi et al.; claims 9 to 20 and 23 were rejected under 35 U.S.C. § 103(a) as unpatentable in view of the combination of Nakasugi et al. and U.S. Patent 5,282,906 (hereinafter “Heitmann et al.”); and claims 21 and 22 were rejected under 35 U.S.C. § 103(a) as unpatentable in view of the combination of Nakasugi et al., Heitmann et al., and an article entitled “The properties of high toughness low-temperature -70C steel 09MnNiDR” by Xiao Chen et al. (hereinafter “Chen et al.”). In view of the amendments to the claims and the following remarks, Applicant requests reconsideration and withdrawal of all rejections.

35 U.S.C. § 112 Rejection of Claims 16-19

On page 2 of the Office Action, the Examiner rejected claims 16 to 19 as being indefinite. Specifically, the Examiner rejected claims 16-19 as reciting strength without further defining the type of strength claimed. Applicant respectfully submits that to one of ordinary skill in the art, the term “strength” when used by itself refers to tensile strength (i.e., ultimate tensile strength) when no other type of strength is indicated. To expedite prosecution, Applicant has amended claims 16 to 19 to refer to tensile strength so that no confusion exists.

The Examiner further rejected claim 18 for reciting “the strength is at least 1,600 MPa, in particular at least 1,650 MPa.” As the phrase “in particular” is indefinite, Applicant has further amended claim 18 to read “wherein the tensile strength is at least 1,600 MPa.”

Applicant believes that the amendments to claims 16-19 address and cure the Examiner’s concerns with respect to these dependent claims. Accordingly, Applicant requests reconsideration and the removal of the 35 U.S.C. § 112 rejection of claims 16-19.

35 U.S.C. § 102/§103 Rejection of Claims 1-9

Claims 1-9 were rejected on pages 2-4 of the Office Action as being anticipated by or in the alternative unpatentable in view of Nakasugi et al. Applicant respectfully disagrees.

Amended claim 1 is directed to a steel having the following composition in wt %:

0.08 to 0.25% C,
0.10 to 0.30% Si,
0.80 to 1.6% Mn,
 $\leq 0.02\%$ P,
 $\leq 0.015\%$ S, (the sum of P and S being $\leq 0.03\%$),
0.40 to 0.80% Cr,
0.30 to 0.50% Mo,
0.70 to 1.20% Ni,
0.020 to 0.060% Al,
0.007 to 0.018% N,
0.02 to 0.07% Nb,
remainder Fe, and inevitable impurities.

As such, the claimed steel must include 0.40 to 0.80% Cr, 0.70 to 1.20% Ni, 0.007 to 0.018% N, 0.02 to 0.07% Nb and no V or V present only as an inevitable impurity. (See amended claim 1, in addition, see for example, pages 3 to 5 of the originally-filed specification).

In contrast to Applicant's claimed steel, Nakasugi et al. teaches a steel, which not only can contain V (see col. 2, line 67-68, and tables 2 and 3), but also fails to include any Nb. That is, Nakasugi et al. fails to anticipate Applicant's claim 1 by teaching a steel that is lacking Nb (in particular, is lacking a Nb content of 0.02 to 0.07%, as claimed by Applicant). (See, for example, col. 2, line 54 to col. 3, line 6, and col. 4, lines 3-7 of Nakasugi et al.).

Not only does Nakasugi et al. fail to teach a steel including Nb, but also Nakasugi et al. actually disparages, that is, teaches away from, the use of Applicant's claimed Nb content. (See, for example, col. 1, line 35 to col. 2, line 43, which ends with "The present

inventors have conducted extensive studies for many years for development of a steel composition which overcomes the above defects of the conventional Nb-steels.”; col. 2 line 54 to col. 3, line 6, and col. 4, lines 3-7 “There is no heating problems inherent to the Nb-steels because no Nb is contained.”). As Nakasugi et al. makes it clear that Nb is to be avoided, Applicant respectfully submits that Nakasugi et al. can not be used as a primary reference to support a 35 U.S.C. § 103 rejection, as any modification of Nakasugi et al. to include a Nb content is disparaged and therefore not available for use to support an obviousness type rejection.

With respect to the compositions provided in Table 2 and Table 3 of Nakasugi et al., none of the steels in accordance with the teaching of Nakasugi et al. (i.e., steels 1-7 in Table 2 and steels 1-9 in Table 3) include Nb. Applicant notes that comparison steels labeled as 9 and 12 in Table 2 and 12 in Table 3 do include Nb. However, steel 12 in Table 2 and steel 12 in Table 3 also include V, which is prohibited in accordance with Applicant’s amended claim 1. None of steels 9 and 12 (Table 2) and steel 12 (Table 3) include Applicant’s required Cr content and steel 9 also fails to utilize Applicant’s claimed Ni content.

As none of the steels described in Nakasugi et al. (whether in accordance with the teaching of Nakasugi et al. or described as conventional/comparison by Nakasugi et al.) include each and every limitation of Applicant’s amended claim 1, Applicant respectfully submits that Nakasugi et al. fails to anticipate claim 1 or any claim depending therefrom. Accordingly, Applicant requests that the 35 U.S.C. § 102 rejection of claims 1-9 be reconsidered and withdrawn.

Moreover, as Nakasugi et al. teaches away from Applicant’s claimed Nb content, Applicant respectfully submits that Nakasugi et al. fails to support a 35 U.S.C. § 103 rejection of Applicant’s amended claim 1 or any claim depending therefrom. As a result, Applicant seeks reconsideration and the withdrawal of the 35 U.S.C. § 103 rejection of claims 1-9.

35 U.S.C. §103 Rejection of Claims 9-22

Claims 9-20 and 23 were rejected on pages 4-6 of the Office Action as being unpatentable in view of the combination of Nakasugi et al. and Heitmann et al. Claims 21 and 23 were rejected on pages 6-7 as being unpatentable in view of the combination of Nakasugi et al., Heitmann et al. and Chen et al. Applicant respectfully disagrees.

Claims 9-23 are dependent upon Applicant's amended independent claim 1. As a result, in order for claims 9-23 to be unpatentable in view of the combination of references each and every element of claim 1 must be taught or suggested by the combination.

On page 4 of the Office Action, the Examiner states:

“Nakasugi discloses method for producing a steel sheet having remarkable toughness at low temperature with compositions of all major components encompassing the instant claims. However, he does not teach to use the disclosed steel to make steel bar. Heitmann et al, on the other hand discloses a method to make hot rolled steel bar with relative high hardness, high strength and high toughness to make springs us[ed] in automotive industry.

It would have been obvious for one of ordinary skill in the art at the time of the invention to combine the teaching of Nakasugi of steel composition of high toughness at low temperature with the teaching of Heitmann of steel bar process to manufacture steel products with high toughness at low temperature as the demand of these products is increasing and there are better financial profits than regular steel.”

Thus, the Examiner has alleged that Nakasugi et al. discloses the composition of claim 1 and that Heitmann et al. is provided to address limitations other than composition.

As Nakasugi et al. fails to teach or suggest Applicant's composition as recited in claim 1 for the reasons discussed above, Applicant respectfully requests that the 35 U.S.C. § 103 rejection of claims 9-20 and 23 based on the combination of Nakasugi et al and Heitmann et al should be reconsidered and withdrawn.

On page 6 of the Office Action, the Examiner states:

“Both Nakasugi and Heitmann do not specifically teach the J_{IC} (technical crack initial toughness) of steel, a measurement and testing parameter, despite the teaching of the steel compositions encompass the instant claims... It would have been obvious for one of ordinary skill in the art at the time of the invention to form the steel product of Nakasugi as modified by Heitmann as Chen teaches these characteristics are beneficial to the steel sheet.”

However, as discussed above, Nakasugi et al. fails to teach or suggest Applicant's claimed composition. Accordingly, Applicant seeks reconsideration and the removal of the 35 U.S.C. § 103 rejection of claims 21-22.

CONCLUSION

Applicants respectfully submit that all of the pending claims are in condition for allowance and requests early favorable action. If the Examiner believes a telephonic interview would expedite the prosecution of the present application, the Examiner is welcome to contact Applicants' Attorney at the number below.

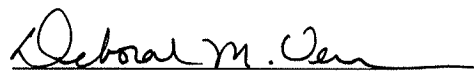
Respectfully submitted,

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